MILITARY SPECIFICATION SHEET

ELECTRON TUBE, THYRATRON

TYPE 6D4

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The complete requirements for procuring the electron tube described herein shall consist of this document and the latest issue of Specification MIL-E-1.

DESCRIPTION: Triode, noise generator

Mounting position: Any

Weight: 0.3 ounce (8.5 grams) nominal

Base: E7-1 (EIA)

Envelope: T5-1/2 (5-2)

Pin connections:

Pin No. ---	1	2	3	4	5	6	7
Element ---	g	nc	h	h	k	nc	a

ABSOLUTE RATINGS:

Parameter:	Ef	Ebb	epx	epy	Ib	ib	tk	Ec1
Unit:	V	Vdc	v	v	mAdc	a	sec	Vdc
Maximum:	6.93	250	350	350	25	0.110	---	-150
Minimum	5.67	---	---	---	---	---	30	---
TEST CONDITIONS:	6.3	125	---	---	---	---	---	---

ABSOLUTE RATINGS:

Parameter:	Rhk	Rg	Rp	Rk	Ehk	Du	TA
Unit:	Meg	Meg	Ohms	Ohms	V	%	°C
Maximum:	---	---	---	---	-110	0.75	+90
Minimum:	---	---	---	---	---	---	-55
TEST CONDITIONS:	1.0	0.5	650	4,000	---	---	---

GENERAL:

Qualification - Required

(D) denotes changes

METHOD	REQUIREMENT OR TEST	NOTES	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL OR CODE	SYMBOL	LIMITS MIN	LIMITS MAX	UNIT
	Quality conformance inspection, part 1								
---	Grid-cathode voltage	1	Ec = -20 Vdc; Rhk = 0	0.65	II	Egk	---	2.0	Vdc
3241	Heater current	-		0.65	II	If	230	270	mA
3201	Critical grid voltage for conduction (1)	4		0.65	II	Ec	-11.0	-14.0	Vdc
(D) 3204	Voltage drop	-	Rb/Ib = 100 mAdc	0.65	II	Etd	---	18	Vdc
	Quality conformance inspection, part 2								
1336	Heater-cathode leakage	-	Ehk = -100 Vdc	---	---	Ihk	---	15	µAdc
3201	Critical grid voltage for conduction (2)	-	Ebb = 50 Vdc	---	---	Ec	-5.0	-7.0	Vdc
3201	Critical grid voltage for conduction (3)	-	Ebb = 300 Vdc	---	---	Ec	-21	-31	Vdc
---	Noise output (1)	2	Ebb = 300 Vdc; Rg = 0; Rp = 56,000 ohms	6.5	S2	---	---	---	---
---	Noise output (2)	3	Ebb = 250 Vdc; Rg = Rk = 0; Rp = 0.33 Meg	---	---	Output	10	---	v
	Quality conformance inspection, part 3								
---	Life test	-	Group A; Ebb = 250 Vdc; Ec = -20 Vdc; Rp = 5,000 ohms; Rhk = disconnected; Ehk = 110 V; t = 500 hours	---	---	---	---	---	---
---	Life-test end points:								
3201	Critical grid voltage for conduction (1)	-		---	---	Ec	-9.5	-15.5	Vdc
---	Noise output (2)	3		---	---	Output	9.0	---	v
1031	Low-frequency vibration	5	No voltages applied	---	---	---	---	---	---

NOTES:

1. Voltage measured across specified grid resistor.
2. The tube shall be placed in the circuit shown (see figure 1) in a constant magnetic field of 375 ±10 percent gausses perpendicular to the normal electron path. The direction of the magnetic field shall be such as to deflect the electron beam toward the top of the tube (north pole of magnet at pin No. 7). The noise voltage measured at the output of the 1,000 Hz bandwidth filter shall not be less than the limits specified below for the various specified frequencies:

Frequency, MHz	Minimum noise voltage, µV, RMS
0.1	10,000
0.2	14,000
0.5	25,000
1.0	22,000
2.0	7,000
5.0	500
10.0	70

NOTES: -Continued

3. The tube shall be placed in the circuit shown (see figure 2) in a constant magnetic field of 375 ±20 percent gausses which is perpendicular to the normal electron path. The direction of the magnetic field shall be such as to deflect the electron beam toward the top of the tube. The noise voltage measured at the anode of the tube and across the output of the circuit shall not be less than the specified limit in peak-to-peak volts. The oscilloscope used for noise amplitude measurement shall have a 3 dB video bandwidth extending to at least 4 MHz.

4. This test shall be the first test performed at the conclusion of the holding period.

(D) 5. This test shall be performed during the initial production and once each succeeding 12-calendar months in which there is production. A regular double sampling plan shall be used, with the first sample of three tubes with an acceptance number of zero, and a second sample of three tubes with a combined acceptance number of two. In the event of failure, the test will be made as a part of quality conformance inspection, part 2, code level D, with an AQL of 6.5. The regular "12-calendar month" double sampling plan shall be reinstated after three consecutive samples have been accepted.

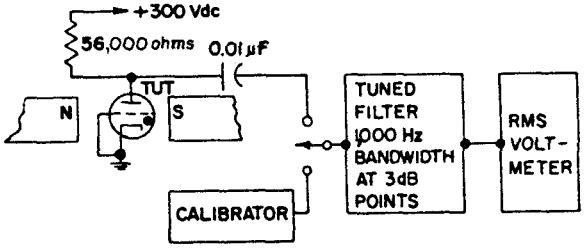

FIGURE 1. Noise voltage test circuit.

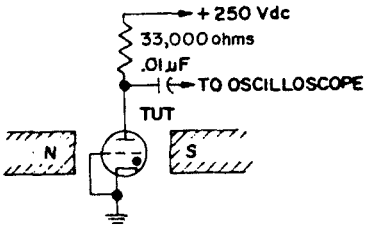

FIGURE 2. Noise voltage test circuit.

Custodians:
Army - EL
Navy - EC
Air Force - 85

Review activities:
Air Force - 17, 80
DSA - ES

User activities:
Army - MU
Navy - AS, OS, MC, CG, SH
Air Force - 11

Preparing activity:
Navy - EC

Agent:
DSA - ES

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